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UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Electrification Administration  
Technical Standards Committee "A"

Supplement No. 1, October 1986, to  
REA Bulletin 43-5, List of  
Materials Acceptable for Use on  
Systems of REA Electrification Borrowers

The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of July through September 1986. The following changes should be made in order to keep it up to date. Pages with a colon between are on the same sheet, both being changed.

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1 - Deadend for steel strand (overhead ground wire)

TRANSMISSION

For high strength, extra high strength steel strand and aluminum clad steel strand

Compression Type

Manufacturer	High Strength Steel 3/8"	Aluminum-clad steel			Extra High Strength 5/16"
		7 No. 9 AWG	7 No. 8 AWG	7 No. 7 AWG	
Fargo	861255	861430	861225	861227	861022 861225 861430
Alcoa	4620.12	4627.14			
Burndy	YTW375E	YTW438E	YTW7M9T	YTW7M8T	YTW7M7T
Homac	Order by wire size and type				

Formed Type\*

Chance		16M-AWTLG	20M-AWTLG	
Helical Line Prod.	HG210-3/8	HG211-7/16	HG523-12.5M	HG209-5/16 HG210-3/8 HG211-7/16

\* Class B galvanizing. When overhead groundwire has Class C galvanizing, formed deadend should also have Class C galvanizing.

Automatic Type

Fargo	GDE-302	GDE-303	GDE-302	GDE-302	GDE-301 GDE-302 GDE-303
Reliable	5202	5203	5202	5203	5201 5202 5203

Conditional List

1(1)

July 1986

1 - Clamp, deadend

DISTRIBUTION

2-Bolt Straight Line, Aluminum Alloy

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
* <u>Anderson/Square D</u> Aluminum alloy deadend Catalog No. ADS-48-N (2/0 ACSR) Catalog No. ADS-60-N (3/0 ACSR)	1130 (1/5/78)  1148 (9/28/78)	(a) To obtain experience (b) Applications limited to replacements under hot line conditions.
* <u>Barron Bethea</u> Aluminum alloy deadend Catalog No. SDF-10A (4 through 4/0 ACSR)	871 (7/6/67)	Same as above.
* <u>Bethea Electrical</u> Aluminum alloy deadend Catalog No. ASO-684-2 (1/0, 2/0, 3/0 ACSR) Catalog No. ASD-2-N (4-2/0 ACSR) Catalog No. ASD-34-N 3/0, 4/0 ACSR	961 (2/18/71)  1201 (12/4/80)	Same as above.  Same as above.
* <u>Burndy</u> Aluminum alloy deadend Catalog No. CUW26RE-1 #2-2/0 Str. Aluminum #4-2/0 ACSR	1255 (3/24/83)	Same as above.
* <u>Continental</u> Aluminum Alloy deadend Catalog No. HDSO-57 (with side opening) (4-4/0 ACSR) Catalog No. SGA-52-23 (4-2/0 ACSR) Catalog No. SGA-60 (3/0-4/0 ACSR)	1244 (10/7/82)	Same as above

\*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot.

p - Connectors

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Anderson/Square D</u> Compression al to al al to cu "Versa-Crimp" L tap.	748 11/1/62	To obtain experience
Parallel groove, aluminum LC-52C (1/0 - 6/1 ACSR over armor rods) LC-51C (1/0 - 6/1 ACSR)	738 6/21/62	" " "
<u>Burndy</u> Compression, insulated "Insulink"	672 8/6/59	" " "
<u>Blackburn</u> Compression, insulated service entrance con- nectors, Types ICS-1 and IKL	1027 10/11/73 1133 2/16/78	" " "
Bolted, insulated IPC 1102 (#2-1/0 run, #2 tap) IPC 4111 (1/0-4/0 run, #2-1/0 tap) IPC 4141 (1/0-4/0 run, 1/0-4/0 tap)	1327 (9/11/86)	1. For use on 600 volt maximum insulated conductors.  2. To be used only for connecting service drop conductors to service entrance conductors.  3. To obtain experience.
<u>Homac</u> Compression, Insulated	1074	" " "
"Shure Splicers" Types Q1N and U1N	9/25/75 1269 11/17/83	

Conditional List  
p(2)  
October 1986

p - Connectors

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Kupler</u> Bolted, insulated 130001 (#2-1/0 run, #2 tap) 130003 (1/0-4/0 run, #2-1/0 tap) 130004 (1/0-4/0 run, 1/0-4/0 tap)	1306 (9/26/85)	1. For use on 600 volt maximum insulated conductors.  2. To be used only for connecting service drop conductors to service entrance conductors.  3. To obtain experience.
<u>Penn Union</u> Compression, Insulated Type PIK	866 2/8/68	To obtain experience.
<u>Utilco</u> Two bolt style, al to al Type PM	1053 11/14/74	" " "

q  
July 1986

q - bolt, double upset

Applicable Specification: "REA Specifications for Single and Double  
Upset Spool Bolts," D-5

Diameter, inches	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{5}{8}$
Length, inches	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
Chance	-	7826	7828	7830
Dixie	D7824	D7826	D7828	D7830
Joslyn	-	J2394	J2395	J2396
Kortick	K4760	K4761	K4762	K4763
McGraw-Edison*		DC3E11	DC3E12	DC3E13
Utilities Service	31065	31067	31069	31071

\*Static proof" designs available.



u - Deadend for galvanized steel guy strand

Strand Size:

1/4" 9/32" 5/16" 3/8" 7/16"

Automatic

Fargo

Bail for thimble eye

GDE-300

GDE-301

GDE-302

GDE-303

Reliable

Bail for thimble eye  
Bail for guy insulator

5100  
5150

5201  
5251

5201  
5251

5102  
5152

5103  
5153



Formed Type

Chance

For standard guy\*  
For wrapped guy

1/4 CTLG  
1/4 GSC-C

9/32 CTLG  
9/32 CTLG-C

5/16 CTLG  
5/16 GSC-C

3/8 CTLG  
3/8 GSC-C

7/16 CTLG  
7/16 GSC-C

Helical Line Products

For standard guy\*

HG-207-1/4"

HG-208-9/32"

HG-209-5/16"

HG-210-3/8"

HG-211-7/16"

Preformed Line Products

For standard guy\*  
For wrapped guy

GDE-1104  
WGL-2100

GDE-1105  
WGL-2101

GDE-1106  
WGL-2102

GDE-1107  
WGL-2103

GDE-1108  
WGL-2104

\*Class B galvanizing. When guy wire has Class C galvanizing, formed deadend should also have Class C galvanizing.



u - Deadend for alumoweld guy strand

Strand Size	3#10(4M)	7#12(6M)	7#11(8M)	7#10(10M)	7X.110"(11.5M)	7#9(12.5M)	7X.121"(14M)	7#8(16M)	7X.148"(20M)
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Formed Type

Alumoweld Guy Strand

Chance

For standard guy

Helical

Line Products

For standard guy

Preformed Line

Products

For standard guy

For wrapped guy

Automatic

Alumoweld Guy Strand

Fargo

Reliable

12.5M-AWTLG

HG528-20M

HG525-16M

HG523-12.5M HG524-14M

AWDE-4126

AWDE-4122

AWDE-4120

AWDE-4119

WGL-4120

GDE-302

5202

GDE-301

5201

GDE-300

5200

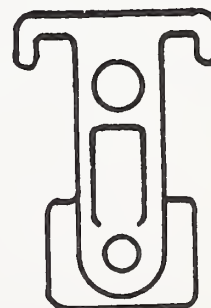
GDE-301

5201



v - Guy Attachment  
for 5/8" bolt

<u>Type:</u>	<u>Formed Strap</u>	<u>Angle Bolt Eye</u>	<u>Guy Hook</u>	<u>Pole Eye Plate</u>
<u>Maximum Working Load Rating</u>	<u>23,130 N (5200 lbs.)</u>	<u>23,130 N (5200 lbs.)</u>	<u>23,130 N (5200 lbs.)</u>	<u>37,800 N (8500 lbs.)</u>
Anderson Elec./ Square D	-	-	-	GSP-05
Barron Bethea	-	-	GH-5*-	-
Bethea Metals	-	-	AGA56* AGA-56X*	FPE5-6
Bethea Electrical	-	-	AG-5*	PE5-6A
Champ	-	-	CH58GH*	CH21PE
Chance	5004	0100	C203-0168*	-
Continental Electric	-	-	GAD-56-4*	PEP-66-45
Dixie	D5004	D0100	DD-9460, DD-9462*	-
Flagg (MIF)	-	-	P151A, P151X*	PX88
Joslyn	J25164	J6500	J6555, J6556	-
Kortick	K4035, K4047	K3140	-	-
McGraw-Edison	DG6H1	DG11E1	DG21H1 DG21H2	-
Power Line Hardware	-	-	HGA-58C*	PGA-548
Universal Electric	-	-	UGA56*	-
Util. Service	31030	5531	-	-



\*This hook may also be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.

Conditional List

v  
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v - Guy attachment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Joslyn Pole Band, with cone head bolt, J-6281 and guy clip J-6275 J-6280 (for 6" to 10" pole) J-6270 (for 8" to 14" pole)	745 8/16/62	To obtain experience. For distribution lines only and 10,000 lbs maximum loading.

ac  
July 1986

ac - Brace, sidearm diagonal

	<u>1-1/2 inch angle</u> <u>3/16" x 5'</u>	<u>1-3/4 inch angle</u> <u>3/16" x 7'</u>
Chance	-	6984
Joslyn	J1521	J1525
Kortick	K1951	K1954
McGraw-Edison	DB1A1	DB1A5
Utilities Service	5210	5212



ae-1  
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ae - Surge Arrester, Distribution  
(Lightning Arresters)

<u>Manufacturer</u>	<u>Type</u>	<u>Ratings, kV</u>	<u>Duty</u>
General Electric	Alugard	9, 10, 18	Heavy
Joslyn	Q	9/10, 18	Normal
	J	9/10, 18	Heavy
Kearney	Unigap	9, 10, 18	Heavy
McGraw-Edison	TS	9/10, 18	Normal
	TL	9, 10, 18	Heavy
Ohio Brass	DA-III	9/10, 18	Normal
	DA-IV	9, 10, 18	Heavy
Westinghouse	LV	9/10	Normal
	LVBB	9/10, 18	Heavy

NOTE: Either arresters with external top gaps and without ground lead disconnectors or direct connected arresters with ground lead disconnectors may be used as specified by the user.

ae - Surge Arresters, Substation\*  
(Lightning Arresters)

<u>Manufacturer</u>	<u>Type</u>	<u>Accepted Ratings - kV</u>	<u>Manufacturer's Classification</u>
General Electric	Alugard	3, 9, 10, 18	Distribution
Joslyn	2RS	9/10, 18	Distribution
	Q	3, 9/10, 18	Distribution
Kearney	Unigap	3, 9, 10, 18	Distribution
Mc-Graw Edison	ES	3, 9/10, 18	Distribution
Ohio Brass	DA	3, 9, 10, 18	Distribution
Westinghouse	LV	3-20	Distribution
	IVL	3-120	Intermediate
	CPL	3-312	Station

- \* For instructions concerning application at substations, refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage ratings in accordance with the line voltage and the type of construction (grounded or ungrounded).

Conditional List  
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ae - Surge Arresters, Distribution  
Metal Oxide

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u> Surge arresters, distribution metal oxide type, ZQ 9, 10, 18 kV	1317 3/27/86	To obtain experience
<u>McGraw-Edison</u>  Surge arresters, distribution, metal oxide type, AZL 9, 10, 18 kV	1287 9/27/84	To obtain experience
<u>Ohio Brass</u>  Surge arresters, distribution metal oxide type Dynavar, DV 9, 10, 18 kV	1283 7/12/84	To obtain experience
<u>Westinghouse</u>  Surge arresters, distribution metal oxide type HMX HEAVY DUTY: 9, 10, 18 kV	1320 5/8/86	To obtain experience

NOTE: Either arresters with external top gaps and without ground lead  
disconnectors or direct connected arresters with ground lead  
disconnectors may be used as specified by the user.

aw  
July 1986

aw - Washer, Spring

1/4 x 1-3/4' x 3-1/2"

<u>Manufacturer</u>	<u>Bolt Size</u>		
	5/8"	3/4"	7/8"
Chance	3540	3541	--
Joslyn	J3540	J3541	J3542
Kortick	K2909	--	--
Fastex (ITW) "Ramp Lok"	1-760-21	1-760-31	1-760-41
McGraw-Edison	DF17W3	DF17W4	DF17W5
Power Line Hardware	SCW-58	SCW-34	SCW-78

ax - Cutout and Arrester, Combination

Nominal System Voltage Cutout Max. Voltage Rating	For 12.5Y/7.2 kV		For 13.2Y/7.6 kV		For 24.9Y/14.4 kV	
	7.8 kV	15 kV	15 kV	27 kV	18 kV	27 kV
Application						
Cutout Current Rating	10 Trans. 50*	30 Bank 30 Sect. 100	10 Trans. 50*	30 Bank 30 Sect. 100	10 Trans. 50*	30 Bank 30 Sect. 100
Manufacturer	Catalog Numbers					
Chance	Crossarm Transformer	C71A-112PB Series	C71A-112PB Series	C71A-112PB Series	C71C-211PB Series	
General Electric	Crossarm (L) Transformer	9F80	9F78A	9F80	9F78A	9F80
Joslyn(valve) (valve) (valve)	Crossarm Transformer	J9237-Q6 J9237-Q2/B J9238-1Q	J9237-Q6 J9237-Q2/R J9238-1Q	J9237-Q6 J9237-Q2/B/R J9238-1Q	J9267-Q6 J9267-Q2/B J9268-1Q	J9267-Q2 J9267-Q2/B
Kearney	Crossarm Transformer	294072	294073	294074	294074	KE7BD109E-110
McGraw-Edison	Crossarm (L) Transformer	AFS301B Series	AFS301C Series	AFS301C Series	AFS800M018 Series	AFS301D Series

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

\*These cutouts have open links and must not be used where fault currents are high or for sectionalizing.

(L) Indicates loadbreak type is available.

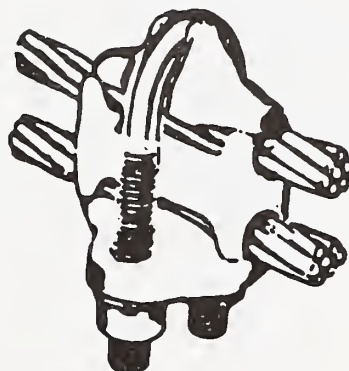


bn  
July 1986

bn - clamp, loop deadend

For ACSR

	3/0	2/0	1/0	2	4
ALCOA	-	413	413	412	411
Anderson/Sq. D	LC-74B	LC-71B	LC-70B1	LC-70B	LC-70B
Bethea Electrical	ALD-7373-U	ALD-34-U	ALD-1313-U	ALD-1313-U	ALD-1313-U
Blackburn	DLC23	DLC2106	DLC2106	DLC2106	DLC2106
Burndy	-	-	UW25R	UW2R	UW2R
C & R	-	-	CRLD-10	CRLD-10	CRLD-10
Electrical Specialty Products	LD-4	LD-2	LD-1	LD-1	LD-1
Fargo	GA-145	GA-145	GA-144	GA-144	GA-144
Weaver	-	-	WDE-10	WDE-2	WDE-2



bo  
October 1986

bo - Shackle, anchor

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson/Sq. D	AS-25
Bethea Electrical	ASH-45
Chance	5801
Continental	AS-25-5-4
Dixie	D5801
Flagg	12300
Joslyn	J2742
Kortick	K4481
Lapp	33852
Lindsey	3260
McGraw-Edison	DC7J1
Ohio Brass	13722
Power Line Hardware	AS-1
Utilities Service	4106

br  
October 1986

br - Chain Link (End Link)

<u>Manufacturer</u>	<u>Catalog Number</u>
Bethea Electrical	CL-5
Continental	L-5
Joslyn (Brewer-Titchener)	BT-3082-HT
Lapp	6415-HT
Lindsey	3403
Ohio Brass	79272

bs  
July 1986

bs - Bolt, single upset

Applicable Specifications: "REA Specifications for Single and Double Upset Spool Bolts," D-5

Diameter, inches	5/8	5/8	5/8	5/8
Length, inches	7	8	9	10
Chance		7741	7741-1/2	7742
Dixie	D7740	D7741	D7741-1/2	D7742
Joslyn	-	J2342-1/2	J2343-1/2	J2344-1/2
Kortick	K4929	K4950	K4930	K4951
McGraw-Edison*		DC2E3	DC2E4	DC2E5
Utilities Service	3105-1/2	31053	31053A	31054



\*"Static proof" designs available.

Conditional List  
bz  
July 1986

bz - Switch, oil

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
McGraw-Edison		
Capacitor oil switch	940	To obtain experience.
Type TSC, 38 kV max.	4/2/70	
100 ampere capacitor switch		
300 ampere load switch		
Oil switch with	1046	1. To obtain experience.
125 kV BIL accessory	7/25/74	
Type NR, 15 kV, single-		2. For use on single-
phase, remote electric		phase taps of
control, 200 amp. at		24.9/14.4 kV multi-
75 to 100 percent power		grounded wye systems.
factor		
South Bend Controls, Inc.	1284	To obtain experience
Capacitor, oil switch	8/2/84	
Type CSD-95, 95 kV BIL		
15 kV Max. 200amp.		
Oil switch with 125 kV	1290	1. To obtain experience
BIL accessory, CSD-125,	11/29/84	
15 kV, single-phase, 200 amp		2. For use on single-
		phase taps of
		24.9/14.4 kV multi-
		grounded wye systems.

cg - Switch, air, three-pole, group-operated  
NEMA standard switches for station and line structures

Manufacturer	Acceptable Mounting on Structures	Tilting Ins. Type kV	Vertical Break Type kV	Side Break Type kV	Center Break Type kV
Brown Boveri Electric (ITE)	Horizontal		TTR6 15-345		
A. B. Chance	Horizontal Phase over Phase Vertical			D6(L) 15-34.5 D6(L) 15-34.5 D6(L) 15-34.5	
Johnson	Horizontal		VIP 15-230	LS 15-69	M 15-230
Joslyn (Hi-Voltage)	Horizontal Horizontal		RF-2(VL) 15-230	RB-1(VL) 15-25 RB-1* 15-115	
Kearney	Horizontal		AR 60-P 15-69		
MEMCO	Horizontal Horizontal	AgF 15-69 AgC 15-69	EA 15-345		EE 69-230 R14-C 15-46
G & W Electric Co.	Horizontal		MK-40 15-69	PMB-40A 15-69	LPC 69-230
Powerdyne (Kearney)	Horizontal Phase over Phase				V2-V4 15-230 V2 15-230

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

\*These switches may be purchased with reduced voltage vacuum interrupters and may be applied for loop sectionalizing duty when peak recovery voltage does not exceed 25 kV

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group operated  
(not Suitable for Substation Use)

<u>Manufacturer</u>	<u>Acceptable Mounting</u>	<u>Vertical Break Type</u> kV	<u>Side Break Type</u> kV	<u>Center Break Type</u> kV
Chance	Horizontal Phase over Phase Vertical		D6(L) 15-34.5 D6(L) 15-34.5 D7(L) 15-34.5	
K-P-F	Horizontal Phase over Phase Phase over Phase	SV-202 23	A202-A208 15-110 A202(L) 15-21 W202(L) 15-21 MD202(L) 15-21	
Powerdyne (Kearney)	Horizontal Phase over Phase			V2 15-23 V2 15-23

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg-5  
July 1986

cg - Switch, three-pole, group-operated  
(Factory Preassembled)

<u>Manufacturer</u>	<u>Acceptable Mounting on Structures</u>	<u>Vertical Break</u>		<u>Side Break</u>	
		<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>
Chance	Horizontal (A)			D7(L)15-27	
	Phase over			D7(L)15-27	
	phase (A)				
	Vertical (A)			D7(L)15-27	
	Horizontal (B)			D7(L)34.5	
				(200 kV BIL)#	
S & C	Phase over			D7(L)34.5	
	phase (B)			(200 kV BIL)#	
	Vertical(B)			D7(L)34.5	
				(200 kV BIL)#	
	Horizontal (A)			Alduti(L)15-25	
	Phase over			Alduti(L)25	
	phase (A)				
	Vertical (A)			Alduti(L)15-25	
	Phase over	Alduti(L)34.5		Alduti(L)34.5	
	phase (B)	(200 kV BIL)#		(200 kV BIL)#	
	Vertical (B)	Alduti(L)34.5			
		(200 kV BIL)#			
Westinghouse	Horizontal (A)			SLB-3(L)15-25	

(L) Means gas or solid material full-load interrupters are accepted and available.

# Accepted for transmission use only, provided the steel crossarm base is grounded with an adequate grounding connector.

(A) Not suitable for substation use.

(B) NEMA standard switches for station and line structures.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods, except as otherwise noted.



cz - Splice for Steel Strand (Overhead Ground Wire)

		<u>Compression</u>			
		<u>Single Sleeve Only</u>		<u>Aluminum Clad Steel</u>	
		<u>High Strength Steel</u> 3/8" 7/16"	<u>Extra High Strength</u> 5/16" 7/16"	<u>7 No. 9 AWG</u>	<u>7 No. 7 AWG</u>
Alcoa			4914.386		
Burndy	YTS375E	YTS438E		YDS7M9T	YDS7M7T
Fargo	811425	811630	811425	811425	811630
Homac	29714				
Kearney	HR-3/8-3-7S				
National. Tel. Supply	5-7/120692	5-7/145J22			

Steel and Aluminum Sleeves

		<u>Automatic</u>			
		5041	5043	5042	
Homac	29714 & 28414 (Two piece)				
Reliable	5043	5042	5003		5043
Electroline	GD-537				
Helical Line Products	HS-310-3/8"				
	HS-311-7/16"				

Bolted Type

Formed Type

da  
July 1986

da - Bracket, insulated

	<u>Bracket without Insulator</u>	<u>Bracket with 1-3/4" Spool Insulator</u>	<u>Bracket with 3" Spool Insulator</u>
Chance	0327	0327-C909-1032	0327-C909-1034
Dixie	D0327	-	-
Joslyn	J1300	J1301	J1303
Kortick	K9278	K9081	K9082
McGraw-Edison	DC2C1	-	-
Hughes Brothers	1077LI	1077SI	1077I

du  
October 1986

du - Link, Extension

DISTRIBUTION

<u>Manufacturer</u>	<u>Catalog Number</u>
Bethea Electrical	LCE-14
Bethea Metals	ACL-14-5
Chance	C207-0112
Continental	CEL-14
Flagg (MIF)	PA319
McGraw-Edison	DC33B6
Utilities Service	495

TRANSMISSION  
(25,000 lbs. min. strength)

Bethea Electrical Products	ASM 7209-1-BC
Joslyn	J26082

Guy Extension Link  
(For "H" Structure)

<u>Manufacturer</u>	<u>One Guy Attachment</u>	<u>Two Guy Attachment</u>
Joslyn	J22421	J26025

NOTE: The distribution extension links may be substituted for anchor shackle (Item bo), eye bolt (Item o) and eye nut (Item aa) for both small and large conductor drawings shown in REA Form 803 and REA Bulletin 50-3 at the option of the owner.

Conditional List  
du(1)  
July 1986

du - Connecting Links

Conditions: To obtain experience in conjunction with pole bands [Item fv(1)]  
Strength Rating: 25,000 lbs. ultimate loading.

<u>Manufacturer</u>	<u>Link to</u> <u>guy</u>	<u>Size</u>	<u>Meeting No.</u> <u>and Date</u>
Hughes	3154 Link to Insulators	3/8" x 2" x 9-1/2"	1172 9/20/79
Hughes	3176	3/8" x 3" x 9-1/2"	1172 9/20/79
	<u>Link to</u> <u>guy</u>		
Joslyn	J26033	3/8" x 2" x 9-1/2"	1292 1/10/85
	<u>Link to</u> <u>Insulators</u>		
Joslyn	J26034	3/8" x 3" x 9-1/2"	1292 1/10/85

eh  
October 1986

eh - Hook, ball

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson Elec./Square D	HB-30
Bethea Electrical	BH-5
Continental Electric Co.	BH-30-5
Flagg	13400
Joslyn (Brewer-Titchener)	3001-HT
Lapp	7055
Lindsey	3310
Ohio Brass	78420
Power Line Hardware	BH-30

ei - Clamps, suspension with socket eye

ACSR with Straight or Formed Armor Rods

	AWG			kcmil		
	1/0 & 2/0	3/0	4/0	266.8	336.4	477
<u>Iron or Steel Clamps</u>						
Anderson	MS-82-S	--	MS-104-S	MS-104-S	--	--
Barron Bethea	FGW-4S	--	--	--	--	--
Bethea Electrical	FS-83-S	--	--	--	--	--
Joslyn	6203	6204	6204	6205	6255	6257
(Brewer Titchener)						
Lapp	305743S	--	--	--	--	--
Ohio Brass	83085	83105	83105	83115	83125	83145
<u>ACSR with Straight or Formed Armor Rods</u>						

	AWG			kcmil		
	1/0 & 2/0	3/0 &	4/0	266.8	336.4	477
<u>Aluminum Alloy Clamp</u>						
Anderson	HAS-85-S	HAS-104-S	HAS-104-S	HAS-104-S	HAS-118-S	HAS-139-S
Bethea Electrical	LS-1-S	LS-2-S	LS-2-S	LS-2-S	LS-3-S	LS-4-S
C & R	CRSC-1S	CRSC-2S	CRSC-3S	CRSC-3S	CRSC-3S	--
Dulmison	--	AGS	AGS	AGS	AGS	AGS
Continental	SC-85-S	SC-105-S	SC-105-S	SC-105-S	SC-119-S	SC-136-S
Joslyn (Brewer Titchener)	9503-S	9504-S	9504-S	9504-S	9505-S	9506-S
Lapp	306029S	306030S	306030S	306030S	306031S	306032S
Ohio Brass	87085	87105	87105	87105	87115	87135
*Preformed	--	AGS	AGS	AGS	AGS	AGS

\*Clevvis type available.

sd - Current Transformers  
Outdoor Types

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Electromagnetic Ind. (Square D)</u>		
Type UMCT, 0.6 kV	971(7/15/71)	To obtain experience.
Type UCT, 0.6 kV		
Type IK 4-350-69, 69 kV (cycloaliphatic resin bushings)	1325 (8/14/86)	
<u>Balteau Standard</u>		
Type KEWO-110, 15 kV	1212 (5/21/81)	To obtain experience.
Type KEWO-150, 25 kV		
Type KEWO-200, 34.5 kV,		
Type KEWO-350, 69 kV		

se  
July 1986

se - Voltage Transformers

Outdoor Types

<u>Manufacturer</u>	<u>.6 kV</u>	<u>15 kV</u>	<u>25 kV</u>	<u>34.5 kV</u>	<u>69 kV</u>
Associated Engineering	CL TL	PTT-150 SPOF-100 PTT-110	PTT-150 SPOF-150	POF-200	POF-350
Duncan	DVE-6 DVF-6				
Electromagnetic Industries (Square D)		PO5-110	PO5-150	PO5-200	U3-350-69
General Electric	JVA-0 JVP-0	JVW-5 JVW-110	JVW-6 ET-150 JVT-150	JVW-7 ET-200 JVT-200	ET-350 JVT-350
Sangamo	T6A T7				
Westinghouse	PPM	VOG-11 VOZ-11	PTOM-150 APT-150	APT-200	APT-350 LPT-350

NOTE: The transformer types listed above are acceptable in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.



se - Voltage Transformers

Outdoor Types

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Astra</u>		
Type DB, 0.6 kV	1087 (4/1/76)	To obtain experience.
Type DA, 0.6 kV		
Type DF, 0.6 kV	1261 (6/23/83)	
 <u>Balteau Standard</u>		
VE02-110, 15 kV	1212 (5/21/81)	To obtain experience.
VE05-110, 15 kV		
 <u>Electromagnetic Industries (Square D)</u>		
Type U-450, 0.6 kV	1080 (12/23/75)	To obtain experience.
Type U-4-350-69, 69 kV	1325 (8/14/86)	
(cycloaliphatic resin bushings)		

sj  
July 1986

sj - Switches, oil circuit recloser by-pass

<u>Manufacturer</u>	<u>15 kV for Use on 12.5/7.2 kV Systems</u>	<u>27 kV for Use on 24.9/14.4 kV Systems</u>	<u>Current Rating Amperes</u>
Kearney	D73RB	D73RB	600
McGraw-Edison	FW77D7	FW77D9	600

U fz - Transformer Connector Block, Insulated

Single Cable Connectors

Non-Watertight - For use in above grade locations only

Manufacturer

Electrical Specialty Products

Catalog Number

Type SM transformer bushing  
connector kit. (Stud to  
aluminum cables through 350 kcmil)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U gc  
October 1986

<u>Manufacturer</u>	U gc - Shield, cable riser	<u>Length (Feet)</u>
	<u>Dia. (Inches)</u> <u>Galvanized Steel</u>	
Chance	2 - 3 - 3-1/2	5 - 9
*Electrical Materials	2 - 3 - 4 - 5	5
*#Fargo	2 - 3 - 3-3/4 - 5	5 - 8 - 10
*Joslyn	2 - 3 - 3-1/2	5 - 8
*McGraw-Edison	2 - 3 - 4	3 - 5 - 10
Midland-Ross (Kindorf Snapduct)	2 1/2 - 3 1/2 - 5 (14 ga. galv. steel)	2 1/2 - 5 - 10
#Utility Products Co.	3/4 - 1 - 2 - 3 - 3-3/4	3 - 5 - 8

Plastic and Fiberglass

Custom Plastics	2 - 3 - 4 - 5	5 - 10'
*Electrical Materials (plastic)	2 - 3 - 4 - 5	5 - 10
*Hercules (Haskon) (plastic) (Power Mold, I, II, III)	2 - 3 - 4 - 5	5 - 9 - 10
*Joslyn (plastic)	2 - 3 - 4 - 5	5 - 10
*Nordic (fiberglass)	2 - 3 - 5	5 - 10
*Quazite Corporation (Composolite - plastic)	2 - 3 - 4 - 5	10

(Order by size and length)

#All sizes available with galvanized finish or painted-over galvanizing.

\*All sizes available with back plate.

U gn - Enclosures, equipment

Applicable Specifications: "REA Specifications for Equipment Enclosures,"  
U-4

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>Pad-Mounted</u>	
<u>Durham</u>		
Series 4242 (dead-front)	966	To obtain experience
Series 5454 (dead-front)	5/6/71	
Series 3452 (dead-front)	1078 (11/26/75)	
<u>Electrical Equipment</u>		
TH1-DF Series (dead-front)	975 (9/16/71)	To obtain experience
<u>Elliott</u>		
EPM-PTS (dead-front)	1293 1/24/85	To obtain experience
<u>Inter-alloys</u>		
3636-DF-SP	1052	To obtain experience
4242-DF-SP	10/31/74	
5454-DF-SP	1133	
6666-DF-SP	2/16/78	
7272-DF-SP		
<u>Malton Electric</u>		
1-Phase Single Unit (dead-front)	978 10/28/71	To obtain experience
<u>Maysteel</u>		
E/L100	969	To obtain experience
(For use with dead-front pole-type transformers - see Item an)	6/17/71 1080 12/23/75 1322 6/19/86	
<u>Western Power Products</u>		
FG-DF1 (dead-front)	966	To obtain experience
FG-DF3 (dead-front)	5/6/71	

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.

Conditional List  
U gn(2)  
October 1986

U gn - Enclosures, Equipment

Sectionalizing Enclosures

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Carolina Dielectrics</u> Model 0501	994 (6/29/72)	To obtain experience.
<u>Durham</u> Mini-Section Low Profile I, Low Profile III and Tri- Section Series	1077 (11/13/75)	To obtain experience.
<u>Electrical Equipment</u> LPT-228-P LPT-249-P 3Ø LPT-266-P 3Ø	1103 (12/2/76)	To obtain experience.
<u>Maysteel</u> CW200 Series CW300 Series	969 (6/17/71) 987 (3/16/72) 1322 (6/19/86)	To obtain experience.
<u>Nordic</u> ND Series	1255 (3/24/83)	To obtain experience.
<u>Western Power Products</u> Model 24-1 Model 34-2 Model SPM-320 1Ø Model SPM-540 3Ø	966 (5/6/71) 1136 (4/6/78) 1209 (4/2/81)	To obtain experience.
<u>Shallbetter</u> SPMS Series (dead-front)	1328 (9/25/86)	To obtain experience.
<u>Willow</u> WT-130 WT-248 WT-364 *WT-130 PM *WT-248 PM **WT-248 XM **WT-364 XM	1038 (4/4/74)	To obtain experience.

\*For pole mounting.

\*\*For crossarm mounting.

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.

U gu - Pedestal, Power

Refer to Construction Drawings UK5 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power  
Pedestals," U-6

<u>Manufacturer</u>	<u>Inside Dimensions</u> <u>Inches</u>	<u>Height</u> <u>Inches</u>	<u>Catalog No.</u>
Coil Sales (Charles Industries)	8.25 Dia	31-1/2	CPLP-8
	8.25 Dia	31-1/2	CPLP-8I(Integral Stake)
	10.75 Dia	31-1/2	CPLP-10
	10.75 Dia	31-1/2	CPLP-10I(Integral Stake)
Fargo	8 x 8	38	UP-1520C
	8 x 8	44	UP-1620C
	8 x 12	27	UP-1720C
	8 x 12	44	UP-1820C
	10 x 10	27	UP-2320C
	10 x 10	38	UP-2220C
	10 x 10	43	UP-2420C
	10 x 16	37	UP-2520C
Inter-Alloys	7.75 x 11	24	C-24128-PH
	7.75 x 15	24	C-24168-PH
	7.75 x 11.5	24	**PM-24128-PH
	7.75 x 15.5	24	**PM-24168-PH
Nordic	8 x 8	44	PR-50, PR-55
	9 x 14	30	PR-149 (stake)
			PR-150 (stakeless)

\*Furnished with stake.

\*\*Pole mounted

U gu-2  
October 1986

U gu - Pedestal, Power

Refer to Construction Drawings UK5 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power Pedestals," U-6

<u>Manufacturer</u>	<u>Inside Dimensions Inches</u>	<u>Height Inches</u>	<u>Catalog No.</u>
Shallbetter	7.5 x 10.25	39	SUTP Series
Utility Products	8 x 8	38	UP 8HLP
	8 x 8	46	UP 8HP
	10-1/2 x 10-1/2	26	UP 10HLP
	16-1/2 x 10-1/2	36	UP 1016HLP
	10-1/2 x 10-1/2	42	UP 10HP
Vertex	8 x 14	30	SP 814
Western Power	8 x 8	30	*SP-8, DF-3 (dead- front)
	9 x 9	30	*SPMC-9-DF3
	9 x 9	30	SPM-90, DF-3 (stakeless)
	9 x 14	30	*SPMC-14-DF3
	9 x 14	30	SPM-140, DF-3 (stakeless)

\*Furnished with stake.

\*\*Pole mounted



U gu - Power Pedestal  
Refer to Drawings UK6 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power  
Pedestals," U-6

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Associated Plastics</u> Molded polyethylene with galvanized steel or plastic cover Catalog Nos. 1730-1, 3; 1324-1, 3	1113 (4/28/77)	To obtain experience.
<u>Blackburn</u>  Molded polyethylene with glavanized steel cover and ground lug. Catalog No. SDR-2PG	991 (5/11/72)	To obtain experience.
<u>Burndy</u> Molded polyethylene with galvanized steel cover. Catalog No. URD20G23	997 (7/27/72)	To obtain experience.
<u>Carson</u> Molded polyethylene with plastic cover Catalog No. 1324-12B and 1730-12B	1109 (3/3/77)	To obtain experience.
<u>Fargo</u> HDPE, B-100R Series ABS, B-200R Series	1140 (6/1/78) 1166 (6/21/79)	To obtain experience.
<u>Mo. Ped.</u> Molded high density polyethylene with HDPE cover, Model No. 186	1324 (7/31/86)	To obtain experience.
<u>Pen-Cell</u> Molded polyethylene with galvanized steel or plastic cover Catalog No. PE-20-REA Polycarbonate Box cover Catalog No. AG-20-6-REA	983 (1/20/72)  1156 (2/1/79)  1191 (7/24/80)	To obtain experience.



## U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u> <u>12.5/7.2 kV</u>	<u>Conditions</u>
<u>Durham</u>		
Model FTSP-CL, single phase pad-mounted, 1 thru 4 fused taps	1020 7/5/73	To obtain experience
Model FTSP-CL3, three-phase pad-mounted, 1 and 2 fused taps	1077 11/13/75	To obtain experience
<u>Electrical Equipment</u>		
FTDF-P Series, single and three-phase, one and two fused taps, pad-mounted	1040 5/2/74	To obtain experience
*GGCL-P Series, single and three-phase, pad-mounted	1047 8/8/74	To obtain experience
<u>Elliott</u>		
Type EPMR, single and three-phase, pad-mounted	993 (6/8/72) 1007 (1/4/73) 1009 (2/1/73) 1010 (2/15/73) 1292 (1/10/85)	To obtain experience
<u>Powercon</u>		
Type PMF, single-phase pad-mounted	981 12/16/71	To obtain experience
Type PMF-8.3, three-phase pad-mounted	998 8/17/72	
<u>Inter-Alloys</u>		
Uni-Versal single- and three-phase pad-mount fusible switchgear and loadbreak switches Series UV-FL	1133 2/16/78	To obtain experience

\*Furnished with current limiting fuses.

NOTE 1: Enclosures on this page must comply with the dead-front requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>12.5/7.2 kV</u>	
<u>G &amp; W</u> PLDR, PFLDR (submersible and pad-mounted) single-phase and three-phase, fused or unfused switchgear. (Choice of deep well or deadbreak bushings) (must specify pentahead security bolt when ordering)	1200 (11/20/80)	To obtain experience.
<u>Malton</u> MEF21	1108(2/17/77)	To obtain experience.
<u>McGraw-Edison</u> EH3A Series, single-phase, pad-mounted	1065 (5/15/75)	To obtain experience.
<u>S &amp; C</u> Mark III, Models PMS (with option G-7) 200 ampere three-pole switching and 200 ampere single-pole switching	1112 (4/14/77) 1198 (10/23/80) 1202 (12/18/80)	To obtain experience.
<u>Shallbetter</u> SPMD Series, single and three-phase, pad-mounted SPMC Series, 200 ampere single-pole switching	1328 (9/25/86)	To obtain experience.
<u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 300 amp	1151 (11/16/78)	To obtain experience.

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>24.9/14.4 kV</u>	
<u>Elliott</u> Type EPMR, single- and three-phase, pad-mounted	1030 11/21/73 1292 1/10/85 1293 1/24/85	To obtain experience
<u>G &amp; W</u> PLDR, PFLDR (submersible and pad-mounted) single-phase and three-phase, fused or unfused switchgear (Choice of deep well or deadbreak bushings) (must specify pentahead security bolt when ordering)	1200 (11/20/80)	To obtain experience.
<u>Inter-Alloys</u> Uni-Versal single- and three-phase pad-mount fusible switchgear and loadbreak switches Series UV-FL	1133 2/16/78	To obtain experience
<u>Powercon</u> Type PMF, single-phase pad-mounted Type PMF, three-phase pad-mounted	998 8/17/72	To obtain experience

NOTE 1: Enclosures on this page must comply with the dead-front requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

Conditional List  
U he(2.1)  
October 1986

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u> <u>24.9/14.4 kV</u>	<u>Conditions</u>
<u>RTE</u> Type LBS, single- and three-phase, pad- mounted, 300 amp	1095 8/11/76	To obtain experience
FuseTER, series single-phase and three-phase	1296 3/28/85	To obtain experience
<u>Shallbetter</u> SPMD Series, single and three-phase, pad-mounted	1328 9/25/86	To obtain experience.
<u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 200 amp	1151 11/16/78	To obtain experience

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment  
(600 amp)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Type LVS (submersible and pad-mounted) single-phase and three-phase, vacuum switching equipment, fused or unfused, 200 or 600 amp, 15-25 kV	1074 (9/25/75) 1108 (2/17/77) 1202 (12/18/80) 1211 (4/30/81)	To obtain experience.
<u>Electrical Equipment</u>		
Type PSI 15 kV, 25 kV 600 amp., three-phase switching, and 200 amp., single-phase switching. (when ordering, add suffix B-3)	1196 (9/18/80)	To obtain experience.
<u>Elliott</u>		
Type EPMR, Single and three-phase, pad-mounted 25 kV	1292 1/10/85	To obtain experience
<u>General Electric</u>		
Series PSB (pad-mounted) and SSB (submersible) three-phase switching equipment, 200 or 600 amp., 15 or 27 kV	1022 8/2/73	To obtain experience
<u>Kearney</u>		
Series VE - pad-mounted, 15 kV and 25 kV, single phase and three-phase vacuum switching, fused or unfused 200 or 600 amps	1184 4/10/80	To obtain experience
Series VP - submersible, single phase and three-phase, vacuum switching, 200 or 600 amp, 15 and 25 kV, with or without VACOP remote operator	1184 4/10/80	To obtain experience

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Specification U-4.

NOTE 2: Single-phase switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.



Conditional List  
U he(3.1)  
October 1986

U he - Enclosures, Sectionalizing Equipment  
(600 amp.)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u> Type SG6 (submersible) three-phase switching equipment, 600 amp., 15 or 25 kV	1112 4/14/77 1238 7/15/82	To obtain experience
<u>RTE</u> Type LBS, single-and three- phase, pad-mounted 15 kV	1095 (8/11/76)	To obtain experience.
Type R-VAC, three-phase vacuum switchgear, 15-25 kV	1322 (6/19/86)	To obtain experience.
<u>S &amp; C</u> Mark III, Model PMH (with option G-7) 15-25 kV, 600 amp., three-phase switching and 200 amp. single-pole switching	1112 (4/14/77) 1198 (10/23/80) 1202 (12/18/80)	To obtain experience.
Model PME-15-25 kV, Fully enclosed live parts at all times, three-phase switching and 200 amp single pole switching	1254 (3/3/83)	To obtain experience.
<u>Trayer</u> 800 Series, pad mounted three-phase vacuum switching equipment, 200 and 600 amp., 15-25 kV with or without fusing	1160 (3/29/79)	To obtain experience.
501 submersible vacuum fuse enclosure, deadfront 200 or 600 amp., 15-25 kV	1160 (3/29/79)	
Type SSA (submersible, fused and unfused) 200 and 600 amp., 15-25 kV	1034 (1/31/74)	

Note 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

Note 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.



U hp - Terminations, Elbow  
(rated for switching on three-phase systems)

(When ordering, specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u> <u>Conditions</u>	<u>Meeting No. and Date</u>	
<u>RTE</u>		
15 kV, Loadbreak SBT IV 2604600B Series with test point	1032 (12/20/73)	To obtain experience.
2604599B Series without test point	1122 (9/8/77)	
25 kV, Loadbreak SBT 2604740B Series with test point	1148 (9/28/78)	
2604741B Series without test point		
<u>Elastimold (ESNA)</u>		
15 kV		To obtain experience.
Loadbreak without voltage test point Style 165-LR	1068 (6/26/75)	
Loadbreak with voltage test point Style 166-LR		
Loadbreak without voltage test point Style 167LR	1324 (7/31/86)	
Loadbreak with voltage test point Style 168LR		
25 kV		
Loadbreak without voltage test point Style 271-LR		
Loadbreak with voltage test point Style 272-LR		
Loadbreak without voltage test point Style 273LR	1324 (7/31/86)	
Loadbreak with voltage test point Style 274LR		
35 kV		
Loadbreak without voltage test point Style 375LR	1312 (1/9/86)	
Loadbreak with voltage test point Style 376LR		
<u>General Electric</u>		
15 kV, Loadbreak 9U01A--4--Series	1133 (2/16/78)	To obtain experience.
25 kV, Loadbreak 9U01B--5--Series		

Conditional List  
U hp(2)  
July 1986

U hp - Terminations, Elbow  
(rated for switching on three-phase systems)

(When ordering, specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Blackburn</u>		
15 kV, Loadbreak	1054 (11/27/74)	To obtain experience.
JT2B (without test point)		
JT2BT (with test point)	1311 (12/19/85)	
25 kV Loadbreak	1304 (8/8/85)	To obtain experience.
JT2C (without test point)		
JT2CT (with test point)		
<u>Joslyn</u>		
15 kV, Loadbreak		
LBT112M (without test point)	1162 (4/26/79)	To obtain experience.
LBT112TM (with test point)	1165 (6/7/79)	
25 kV, Loadbreak		
LBT262M (without test point)	1240 (8/12/82)	To obtain experience.
LBT262TM (with test point)		
15 kV, Fused Loadbreak		
SPF-T (with test point)	1251 (1/20/83)	To obtain experience.

U hr  
July 1986

U hr - Secondary tap or splice cover, submersible

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
Bishop	Splice-Wrap
Blackburn	Type WDBS (#2 through #4/0) Type DBS (250 KCMIL through 1000 KCMIL)
Connector Mfg. Co.	Utilug Sure Seal
Elastimold (ESNA)	Style 86
Electrical Spec. Prod.	TSC Series
Homac	FSS Series
Kearney	Aqua-Seal Kit
3M	PST Series 8400

Heat Shrink Tubing (with sealant throughout)

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
AMP	Black heat-shrink tubing
Blackburn	HS cable sleeves
Electrical Spec. Prod.	HSB
Panduit	Heat shrink insulating cover
Raychem	WCS cable sleeves
Sigmaform Corporation	Sigmaform heat-shrinkable products

U hv-1  
October 1986

U hv - Cable, Underground  
15 kV Cable

Applicable Specification: REA Specification U-1  
Conductor  
:Copper or Aluminum

#2 AWG through 1000 kcmil  
Insulation  
Crosslinked (XL) Polyethylene or

Ethylene Propylene Rubber (EPR)  
Neutral  
:Copper Concentric Neutral

<u>Manufacturer</u>	<u>Insulation</u>	<u>Flat Strap Neutral Available</u>	<u>Stabilized Neutral Design*</u>
Cablec	XL or EPR	Yes	R-LOK
Conductor Prod.	XL	Yes	Ridg-lok
Hendrix	XL or EPR	No	Neu-lok
Okonite	XL or EPR	Yes	
Pirelli	XL or EPR	Yes	STA-SERVE
Reynolds	XL, or EPR	Yes	Secure-Neutral
Rome	XL or EPR	Yes	Serve-Lock Counter Secure
Southwire Furukawa	XL	No	

\*Accepted design meeting the requirements of paragraph 7.5.2. of REA Specification U-1, for a minimum neutral with a maximum lay.

U hv - Cable, Underground  
25 kV Cable

Applicable Specification: REA Specification U-1  
Conductor : Copper or Aluminum  
                              #1 AWG through 1000 kcmil  
Insulation : Crosslinked (XL) Polyethylene or  
                              Ethylene Propylene Rubber (EPR)  
Neutral : Copper Concentric Neutral

<u>Manufacturer</u>	<u>Insulation</u>	<u>Flat Strap Neutral Available</u>	<u>Stabilized Neutral Design*</u>
Anaconda Power Cable	XL	No	
Cablec	XL or EPR	Yes	R-LOK
Conductor Prod.	XL	Yes	Ridg-lok
Hendrix	XL or EPR	No	Neu-lok
Okonite	XL or EPR	Yes	
Pirelli	XL or EPR	Yes	STA-SERVE
Reynolds	XL or EPR	Yes	Secure-Neutral
Rome	XL or EPR	Yes	Serve-lock Counter-Secure
Southwire Furukawa	XL	No	

\*Accepted design meeting the requirements of paragraph 7.5.2. of REA Specification U-1, for a minimum neutral with a maximum lay.

U hv-3  
July 1986

U hv - Cable, Underground

600 Volt Cable

Applicable Specification: REA Specification U-2  
Conductor : Copper, #4 AWG and larger  
Aluminum, #2 AWG and larger  
Insulation : Cross-Linked polyethylene (XLPE)

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Anaconda Power Cable	Copper or Aluminum
Cablec	Copper or Aluminum
Collyer	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phelps Dodge	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

NOTE: The manufacturers shown above have indicated that their 600 volt cable is suitable for use on 480 volt corner grounded delta circuits.

The above cable may be supplied with UL label for Type USE.

U hv - Cable, Underground

600 Volt Multi-Conductor Cable

Applicable Specification: REA Specification U-2  
Conductor : Copper, #4 AWG and larger  
Aluminum, #2 AWG and larger  
Insulation : Cross-Linked polyethylene (XLPE)  
Cable Configuration : 3 Insulated Conductors Triplexed

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Anaconda Power Cable	Copper or Aluminum
Cablec	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

The above cable may be supplied with UL label for Type USE.



U hv - Cable Underground  
15 kV and 25 kV Concentric Neutral Jacketed Cable

Applicable Specification: REA Specification U-1  
Conductor : Copper or Aluminum  
For 15 kV Cable, #2 through 1000 kcmil  
For 25 kV Cable, #1 through 1000 kcmil  
Insulation : Crosslinked (XL) Polyethylene or  
Ethylene Propylene Rubber (EPR)  
Neutral : Copper Concentric Neutral  
Jacket : High Molecular Weight (HMW) Polyethylene

<u>Manufacturer</u>	<u>Insulation</u>
Cablec	XL or EPR
Conductor Products, Inc.	XL
Hendrix	XL or EPR
Okonite	XL or EPR
Pirelli	XL or EPR
Reynolds	XL or EPR
Southwire Furukawa	XL

NOTE: For grounding purposes insulated jacketed cables must be treated like overhead lines, i.e., at least four ground rods must be installed per mile in accordance with the NESC. (This does not include service grounds, etc., but does include equipment grounds.) Additional grounding may be necessary in soils with higher resistivity. In splices or tap connections, a good seal should be achieved to exclude moisture.

It is recommended that any place that the jacketing is cut (including the connections to ground rods), it be done above ground in a pedestal.



U hv - Cable, Underground  
(15 or 25 kV cable)

TREE RETARDANT

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Cablec</u>	1307 (10/10/85)	To obtain experience
UCAR TR-4202 (XL)		
DFDA 6202 HMW	1311 (12/19/85)	
<u>Conductor Products</u>		
DFDA 6202 HMW	1148 (9/28/78)	To obtain experience
	1198 (10/23/80)	
	1274 (1/9/84)	
UCAR TR-4202 XL	1293 (1/24/85)	To obtain experience
<u>Hendrix</u>		
DFDA 6202 HMW	1151 (11/16/78)	To obtain experience
	1198 (10/23/80)	
HFDE-4202 (XL)	1281 (5/31/84)	To obtain experience
<u>Pirelli</u>		
DFDA-6202 HMW	1152 (12/7/78)	To obtain experience
	1202 (12/18/80)	
UCAR TR-4202(XL)	1288 (10/18/84)	To obtain experience
<u>Reynolds</u>		
Reynotree-U	1151 (11/16/78)	To obtain experience
(DFDA-6202 HMW)	1196 (9/18/80)	
HEFD-4202 (XL)	1255 (3/24/83)	
	1258 (5/5/83)	
<u>Rockbestos Company</u>		
HFDA-4202 (XL)	1279 (5/3/84)	To obtain experience
<u>Rome Cable</u>		
UCAR TR-4202 (XL)	1279 (5/3/84)	To obtain experience
<u>Southwire Furukawa</u>		
UCAR TR-4202 EC XL	1284 (8/2/84)	To obtain experience

Note: Listing on this page indicates acceptance of each manufacturer's use of the indicated tree-retardant insulation material in the manufacture of any primary cables listed under Item U hv.

U hw  
July 1986

U hw - Warning sign

Applicable Specifications: REA Drawings UM12-1 and UM12-2

<u>Manufacturer</u>	<u>Size (inches)</u>	<u>Danger Sign Catalog No.</u>	<u>Caution Sign Catalog No.</u>
Brady*	7 x 10	46133	46043
	10 x 14	46131	46041
Dun-Lap*	7 x 10	DL-D710	DL-C710
	10 x 14	DL-D1014	DL-C1014
	14 x 20	DL-D1420	DL-C1420
	20 x 28	DL-D2028	DL-C2028
Eastern Metal*	7 x 10	REA 12-1-710	REA 12-2-710
	10 x 14	REA 12-1-1014	REA 12-2-1014
	14 x 20	REA 12-1-1420	REA 12-2-1420
	20 x 28	REA 12-1-2028	REA 12-2-2028
Lyle*	7 x 10	UM12-1-710	UM12-2-710
	10 x 14	UM12-1-1014	UM12-2-1014
	14 x 20	UM12-1-1420	UM12-2-1420
	20 x 28	UM12-1-2028	UM12-2-2028
May Advertising	7 x 10	MY710C	MY710B
	10 x 14	MY1014C	MY1014B
	14 x 20	MY1420C	MY1420B
	20 x 28	MY2028C	MY2028B

For pressure sensitive decal add "D" prefix to catalog number.

Truck Sign Service*	7 x 10	TSD-710	TSC-710
	10 x 14	TSD-1014	TSC-1014
	14 x 20	TSD-1420	TSC-1420
	20 x 28	TSD-2028	TSC-2028
Lem	7 x 10	LSS-1400	LSS-1500
	10 x 14	LSS-1401	LSS-1501
	14 x 20	LSS-1402	LSS-1502

\*Reflective signs also available.

The signs listed on this page are to be secured to equipment and transformer enclosures by means of an adhesive or by welding. Screws and rivets are not to be used.

U hx  
July 1986

U hx - Cable Route Marker

<u>Manufacturer</u>	<u>Surface Mounted</u>	<u>Catalog Number</u>
Chance		C554-0001
	<u>Above Grade</u>	
Carsonite		REA-100
Chance		C554-0183
Dun-Lap		DL-R45 DL-R712
Lyle		UM12-712
May Advertising		MY45A MY712A
For pressure sensitive decal add "D" prefix to catalog number.		
Truck Sign Service		BCW-712

Conditional List  
U hy(1)  
October 1986

U hy - Splice, Underground, Permanent

(when ordering, specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>AMP</u> "AmpactSplice" (35 kV)	1126 (11/3/77)	To obtain experience
<u>Elastimold</u> (ESNA) Style 1500S, straight splice, through #1/0 (15 kV)	1135 (3/23/78)	To obtain experience
Style 25-S, straight splice, #2/0 through #4/0 (15 kV)	1135 (3/23/78) 873 (7/27/67)	
Style 15PCJ-1, straight splice, through 4/0 (15 kV)	1311 (12/19/85)	
Style 25-Y, Y-splice (15 kV)	921 (6/26/69)	
Style K-25-S, straight splice (25 kV)		
Style K-25-Y, Y-splice (25 kV)		
Style 25 PCJ-1, straight splice, through 4/0 (25 kV)	1324 (7/31/86)	
Style M-250-S, straight splice (35 kV)	1134 (3/2/78)	
<u>Blackburn</u> Type S4B (15 kV) Type S4C (25 kV)	1160 (3/29/79)	To obtain experience
<u>Joslyn</u> Type PMS152 Straight Splice (15 kV) #4 through #1/0	1251 (1/20/83) 1296 (3/28/85)	To obtain experience
<u>3M</u> Quick Splice II 5411, 5412 (15 kV) (#2 Awg thru #4/0 Awg)	1194 (9/4/80)	To obtain experience
"Quick Splice" 5400 Series (15 kV) (250 kcmil thru 750) 5420 Series (25 kV)	969 (6/17/71) 1024 (8/30/73) 1032 (12/20/73)	

U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Elastimold (ESNA)		
Style 650-S, straight splice (15 kV)	1016 (5/10/73)	To obtain experience.
Style 15PCJ-2, straight splice, through 1250 MCM (15 kV)	1311 (12/19/85)	
Style 650-Y, Y-Splice (15 kV)		
Style K650-S, straight splice (25 kV)		
Style K650-Y, Y-splice (25 kV)		
Style 25 PCJ-2, straight splice, through 1250 MCM (25 kV)	1324 (7/31/86)	
Style M650S, straight splice (35 kV)	1064 (5/1/75)	
Blackburn		
15 kV - S65B Straight splice	1131 1/19/78)	To obtain experience.
25 kV - S65C straight splice		
RTE		
15 kV - 2604904B Series straight splice (MPS-600)	1122 (9/8/77)	To obtain experience.
25 kV - 2604905B Series straight splice (MPS-600)		

Conditional List  
U ja(1)  
July 1986

U ja - Transformer Pad

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Associated Plastics</u> API 4000 Series RPM	1191 7/24/80 1194 9/4/80	To obtain experience
<u>Carolina Dielectrics</u> Model 0502-1 Fiberglass Size: 40" x 44"	1000 9/14/72	To obtain experience
<u>Chance</u> C107-0162 and C107-0171 Fiberglass Size: 40" x 44"	994 6/29/72	To obtain experience
<u>Cyclo</u> Dwg. No. 730126-2 Molded polyethylene Size: 42" x 42"	1147 9/14/78	To obtain experience
<u>Electri-Glass</u> Fiberglass LP-4145 41" x 45"	1286 9/6/84	To obtain experience
<u>Heil Rotomold, Inc.</u> T Series* High density polyethylene	1228 2/4/82	To obtain experience
<u>Highline</u> HL-46B, Fiberglass Size: approx. 42" x 42"	989 4/13/72	To obtain experience
<u>Plastic Structures</u> No. 40402012 Molded polyethylene Size: 40" x 40"	997 7/27/72	To obtain experience
<u>Quazite Corp.</u> Composolite - PH Series	1141 6/15/78 1267 10/13/83	To obtain experience
<u>Thermodynamics</u> Poly-Pad, PR Series* Molded polyethylene	998 8/17/72 1009 2/1/73	To obtain experience

\*Order by catalog number and size.

U sd  
July 1986

U sd - Current Transformers  
600 Volt

Direct Burial Type

Manufacturer

Type or Catalog No.

General Electric

JAL-O

Indoor Type for Pad-Mounted Transformers

Manufacturer

Type or Catalog No.

Astra

AP

General Electric

JAB-O

Westinghouse

CMV



U si-1  
October 1986

U si - Anodes, Sacrificial  
(Drawings UM11-1, UM26, UM27, M2-7, M2-17)

Zinc Anodes\*

	<u>Pre-packaged With Connecting Wire</u>			<u>Bare Continuous Strip (Ribbon)</u>	
	<u>12 lbs.</u>	<u>30 lbs.</u>	<u>60 lbs.</u>	<u>5/8" x 7/8"</u>	<u>1/2" x 9/16"</u>
Federated Metals	S-12 packaged	S-30 packaged	S-60 packaged	Regular Size Type II	Junior size
General Corrosion Service	12HII-4A	30HII-4A	60HII-4A		
Harco	AZC12GJ	AZC30GJ	AZC60HJ		
Mesa	S-12 packaged	S-30 packaged	S-60 packaged	Regular Size	Junior size
Stuart	SZ-12 -----VIBROX packaged-----	SZ-30	SZ-60		

\*When ordering, specify zinc anodes that meet ASTM B418-73 Type II Composition and REA Specification DT-9, "REA Specification for Zinc Sacrificial Anodes."



U si - Anodes, Sacrificial  
(Drawings UM11-1, UM26, UM27, M2-7, M2-17)

Magnesium Anodes\*\*

		<u>Standard Potential</u>				<u>High Potential</u>			
		<u>17 lbs</u>	<u>20 lbs</u>	<u>32 lbs</u>	<u>50 lbs</u>	<u>17 lbs</u>	<u>20 lbs</u>	<u>32 lbs</u>	<u>48 lbs</u>
Federated Metals	17 packaged			32 packaged	50 packaged				
General Corrosion Services	17 packaged			32 packaged	50 packaged	17D3 packaged	20D2 packaged	32D5 packaged	48D5 packaged
Harco	AMC17J	AMC20J	AMC32J		AMC50J	AMC17G	AMC20G	AMC32G	AMC48G
Kaiser Mag.	17 Vibra Pak		32 Vibra Pak		50 Vibra Pak	17 Electromag Vibra Pak		32 Electromag Vibra Pak	50 Electromag Vibra Pak
Mesa	17 packaged		32 packaged		50 packaged	17D Series	20D2	32D Series	48D5
Stuart	SM-17		SM-32		SM-50	SM-17H		SM-32H	SM-48H

\*\*When ordering, specify magnesium anodes that meet REA Specification DT-10, "REA Specification for Magnesium Sacrificial Anodes."

